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Attorney Docket No. ADI-005

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

APPELLANT: Gebhard  
SERIAL NO.: 09/328,749 GROUP NO.: 3728  
FILING DATE: 9-Jun-99 EXAMINER: Anthony D. Stashick  
TITLE: *Torsion System for an Article of Footwear*

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**BRIEF ON APPEAL UNDER 37 C.F.R. § 1.192**

This Appeal Brief is submitted in support of the appeal from the Primary Examiner's January 24, 2003, final rejection of claims 1-4, 6-21, and 23-26 in the above-identified application. Appellant submits this Appeal Brief in triplicate in furtherance of the Notice of Appeal filed April 23, 2003. Appellant encloses a check for \$320.00 to cover the fee for filing this Appeal Brief, and a check for \$110.00 under 37 C.F.R. § 1.17(a) with the accompanying Petition for a One-Month Extension of Time. The Commissioner and Director are hereby authorized to charge any additional fees that may be due, for further extensions of time or any other purpose associated with this submission, or credit any overpayment, to Appellant's undersigned counsel's deposit account number 20-0531 with reference to docket number ADI-005. A duplicate copy of this authorization is enclosed for that purpose.

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Exhibit A      Lawrence H. Van Vlack, Elements of Materials Science and Engineering  
p. 489 (4<sup>th</sup> ed., 1980).

### **REAL PARTY IN INTEREST**

The real party in interest is adidas International, B.V., the assignee, pursuant to an assignment recorded in the records of the U.S. Patent and Trademark Office on July 30, 1999, at Reel 010129, beginning at Frame 0767.

### **RELATED APPEALS AND INTERFERENCES**

The Appellant, the Appellant's legal representative, and assignee are unaware of any other appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

### **STATUS OF CLAIMS**

Claims 1-4, 6-21, and 23-26 have been rejected. Claims 5 and 22 have been cancelled. No claims have been allowed. This appeal involves claims 1-4, 7-21, and 23-26. Claim 6 is not being appealed.

### **STATUS OF AMENDMENTS**

No amendment under 37 C.F.R. § 1.116 has been filed in response to the Final Office Action dated January 24, 2003.

### **SUMMARY OF INVENTION**

The present invention, as set forth in the Appellant's specification, relates to a torsion system for an article of footwear, namely, a shoe used in the sport of cycling. Specification, p. 1, ll. 5-8<sup>1</sup>. The torsion system allows the forefoot part of the cycling shoe to rotate (i.e., flex) a pre-selected amount relative to the rearfoot section. *Id.* In contrast, conventional cycling shoes are typically rigid and lack this flexibility. P. 1, ll. 14-15. The flexibility provided by the Appellant's invention reduces or prevents fatigue or injury. P. 2, ll. 15-16.

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<sup>1</sup> Citations to page and line numbers refer to the Specification as filed.

Claim 1 is directed to a torsion system (Figure 1, RD<sup>2</sup> 5; p. 5, ll. 17-18) for a cycling shoe (Figure 1, RD 1; p. 5, l. 17). The shoe includes a sole with a forefoot area and a rearfoot area. The torsion system has a longitudinal axis (Figure 1, RD 15; p. 5, l. 25), a forefoot portion (Figure 1, RD 16; p. 5, ll. 18-19), a rearfoot portion (Figure 1, RD 14; p. 5, ll. 18-19), and an intermediate portion (Figure 1, RD 12; p. 5, ll. 18-19). The forefoot portion spans substantially the entire forefoot area of the sole from a midtarsal area to a toe area and from a lateral side to a medial side, and has a generally smooth concave contour along the longitudinal axis. The rearfoot portion spans substantially the entire rearfoot area of the sole from the midtarsal area to a heel area and from the lateral side to the medial side. The intermediate portion couples the forefoot portion and the rearfoot portion, and is constructed of a material and configured to allow, in a pre-selected manner, rotation of the forefoot portion relative to the rearfoot portion about the longitudinal axis. P. 5, ll. 19-20; p. 3, ll. 1-3; p. 6, ll. 4-8. The intermediate portion also includes a rib that projects beyond an adjacent surface of the torsion system. Figures 1 and 2E, RD 20; p. 6, ll. 2-4.

Claim 2 is directed to the torsion system of claim 1 wherein the forefoot portion and rearfoot portion rotate between about 5-25 degrees relative to each other about the longitudinal axis at 35 Newtons of torsional load. P. 3, ll. 5-6.

Claim 3 is directed to the torsion system of claim 1 wherein the forefoot portion and rearfoot portion rotate between about 10-20 degrees relative to each other about the longitudinal axis at 35 Newtons of torsional load. P. 3, ll. 6-8.

Claim 4 is directed to the torsion system of claim 1 wherein the forefoot portion and rearfoot portion rotate about 10 degrees relative to each other about the longitudinal axis at 35 Newtons of torsional load. P. 3, ll. 7-8.

Claim 7 is directed to the torsion system of claim 1 wherein the intermediate portion defines at least one circumscribed aperture. Figure 3, RD 21; p. 7, ll. 3-4.

Claim 8 is directed to the torsion system of claim 1 wherein the rearfoot portion defines at least one aperture. Figures 1 and 2F, RD 24; p. 6, ll. 18-20.

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<sup>2</sup> Citations to the figures include the reference designator ("RD") where applicable, and refer to the figures as filed.

Claim 9 is directed to the torsion system of claim 1 wherein the forefoot portion, the rearfoot portion, and the intermediate portion form a single plate. Figure 1, RD 10; p. 5, l. 22.

Claim 10 is directed to the torsion system of claim 9 wherein the plate is substantially rigid in a horizontal plane. P. 5, ll. 22-23.

Claim 11 is directed to the torsion system of claim 9 wherein the plate is between about 1-15 mm thick. P. 3, ll. 26-27.

Claim 12 is directed to the torsion system of claim 9 wherein the plate is between about 3-10 mm thick. P. 3, l. 27.

Claim 13 is directed to the torsion system of claim 9 wherein the plate is between about 5-8 mm thick. P. 3, ll. 27-28.

Claim 14 is directed to the torsion system of claim 9 wherein a thickness of the plate is less in the intermediate portion than in the forefoot and rearfoot portions. Figure 1, RD 12, 14, 16; p. 5, ll. 26-28; Figure 3, RD 120, 140, 160; p. 6, ll. 26-27.

Claim 15 is directed to the torsion system of claim 9 wherein a width of the intermediate portion of the plate is narrower than the forefoot and rearfoot portions. Figure 1, RD 12, 14, 16; p. 5, ll. 26-28.

Claim 16 is directed to the torsion system of claim 9 wherein the plate comprises nylon. P. 7, l. 12.

Claim 17 is directed to the torsion system of claim 9 wherein the plate comprises a composite material. P. 7, l. 13.

Claim 18 is directed to the torsion system of claim 17 wherein the composite material is graphite. P. 7, l. 14.

Claim 19 is directed to the torsion system of claim 17 wherein the composite material is fiberglass. P. 7, l. 14.

Claim 20 is directed to the torsion system of claim 9 wherein the forefoot portion and rearfoot portion comprise material properties different than the intermediate portion. P. 6, ll. 4-8; p. 6, l. 26 – p. 7, l. 1.

Claim 21 is directed to a cycling shoe (Figure 1, RD 1; p. 5, l. 17) that includes a torsion system (Figure 1, RD 5; p. 5, ll. 17-18) and a sole with a forefoot area and a rearfoot area. The torsion system includes a sole plate (Figure 1, RD 10; p. 5, ll. 22-23) rigid in a horizontal plane. The sole plate has a longitudinal axis (Figure 1, RD 15; p. 5, l. 25), a forefoot portion (Figure 1, RD 16; p. 5, ll. 18-19), a rearfoot portion (Figure 1, RD 14; p. 5, ll. 18-19), and an intermediate portion (Figure 1, RD 12; p. 5, ll. 18-19). The forefoot portion spans substantially the entire forefoot area of the sole from a midtarsal area to a toe area and from a lateral side to a medial side, and has a generally smooth concave contour along the longitudinal axis. The rearfoot portion spans substantially the entire rearfoot area of the sole from the midtarsal area to a heel area and from the lateral side to the medial side. The intermediate portion couples the forefoot portion and the rearfoot portion, and is constructed of a material and configured to allow, in a pre-selected manner, rotation of the forefoot portion relative to the rearfoot portion about the longitudinal axis. P. 5, ll. 19-20; p. 3, ll. 1-3; p. 6, ll. 4-8. The intermediate portion also includes a rib that projects beyond an adjacent surface of the torsion system. Figures 1 and 2E, RD 20; p. 6, ll. 2-4.

Claim 23 is directed to the cycling shoe of claim 21 further including an upper. Figure 4, RD 30; p. 7, ll. 10-11.

Claim 24 is directed to the cycling shoe of claim 21 further including an outsole. P. 5, ll. 8-14.

Claim 25 is directed to the cycling shoe of claim 21 further including a cleat attachment system disposed on the forefoot portion. Figures 1 and 2C, RD 18; p. 6, l. 14-15; Figure 3, RD 180; p. 7, ll. 8-9.

Claim 26 is directed to a torsion system (Figure 1, RD 5; p. 5, ll. 17-18) for a cycling shoe (Figure 1, RD 1; p. 5, l. 17). The shoe includes a sole with a forefoot area and a rearfoot area. The torsion system has a longitudinal axis (Figure 1, RD 15; p. 5, l. 25), a forefoot portion

(Figure 1, RD 16; p. 5, ll. 18-19), a rearfoot portion (Figure 1, RD 14; p. 5, ll. 18-19), and an intermediate portion (Figure 1, RD 12; p. 5, ll. 18-19). The forefoot portion spans the forefoot area of the sole and has a generally smooth concave contour along the longitudinal axis. The rearfoot portion spans the rearfoot area of the sole. The intermediate portion couples the forefoot portion and the rearfoot portion, and is constructed of a material and configured to allow, in a pre-selected manner, rotation of the forefoot portion relative to the rearfoot portion about the longitudinal axis. P. 5, ll. 19-20; p. 3, ll. 1-3; p. 6, ll. 4-8. The intermediate portion also includes a rib that projects beyond an adjacent surface of the torsion system. Figures 1 and 2E, RD 20; p. 6, ll. 2-4.

### ISSUES

1. Whether claims 1, 5<sup>3</sup>, 8-11, 15-17, 19-21, 24, and 26 are unpatentable under 35 U.S.C. § 103(a) over Anderié (U.S. Patent No. 4,922,631) in view of Dubner (U.S. Patent No. 3,903,621) and Kraeuter et al. (U.S. Patent No. 5,915,820).
2. Whether claims 23 and 25 are unpatentable under 35 U.S.C. § 103(a) over Anderié (U.S. Patent No. 4,922,631) in view of Dubner (U.S. Patent No. 3,903,621) and Kraeuter et al. (U.S. Patent No. 5,915,820), in further view of Nagano et al. (U.S. Patent No. 5,446,977).
3. Whether claims 2-4, 11-14, and 18 are unpatentable under 35 U.S.C. § 103(a) over Anderié (U.S. Patent No. 4,922,631), in view of Dubner (U.S. Patent No. 3,903,621) and Kraeuter et al. (U.S. Patent No. 5,915,820).
4. Whether claim 7 is unpatentable under 35 U.S.C. § 103(a) over Anderié (U.S. Patent No. 4,922,631), in view of Dubner (U.S. Patent No. 3,903,621) and Kraeuter et al. (U.S. Patent No. 5,915,820), in further view of Eisenbach et al. (U.S. Patent No. 4,815,222).

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<sup>3</sup> The Examiner included claim 5 in this ground of rejection, but Appellant cancelled this claim in the Amendment and Response filed October 23, 2002. Accordingly, Appellant will not address this part of the first ground of rejection.



## GROUPING OF CLAIMS

Appellant respectfully submits that claims 1-4, 7-21, and 23-26 do not stand or fall together and are separately patentable for at least the reasons set forth below.

## ARGUMENT

**I. Claims 1, 8-11, 15-17, 19-21, 24, and 26 constitute nonobvious subject matter and are patentable over Anderié (U.S. Patent No. 4,922,631) in view of Dubner (U.S. Patent No. 3,903,621) and Kraeuter et al. (U.S. Patent No. 5,915,820).**

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**A. Prima Facie Obviousness**

To establish a prima facie case of obviousness, the Examiner must show, *inter alia*, some reason, suggestion, or motivation from the prior art as a whole for the person of ordinary skill to have combined or modified the references to arrive at the claimed invention at the time the invention was made. An invention is nonobvious where one prior art reference teaches away from the combination with another prior art reference. *In re Rudko*, Civ. App. No. 98-1505, slip op. at 5-6 (Fed. Cir. May 14, 1999). A prior art reference may be said to teach away when a person of ordinary skill, on reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that the Appellant took. *In re Gurley*, 31 U.S.P.Q.2d (BNA) 1130, 1131 (Fed. Cir. 1994).

Further, an invention is nonobvious if the elements in the reference deal with problems different than those addressed by the claimed invention. *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 U.S.P.Q. (BNA) 481, 488-89 (Fed. Cir. 1984).

Lastly, the resulting combination of references proposed must show or suggest at least the claimed invention. *See, e.g., In re Wright*, 6 U.S.P.Q.2d (BNA) 1959, 1962 (Fed. Cir. 1988), *overruled in part by In re Dillon*, 16 U.S.P.Q.2d (BNA) 1897 (Fed. Cir. 1990), *and cert. denied*, 500 U.S. 904 (1991); *In re Nielson*, 2 U.S.P.Q.2d (BNA) 1525, 1528 (Fed. Cir. 1987).

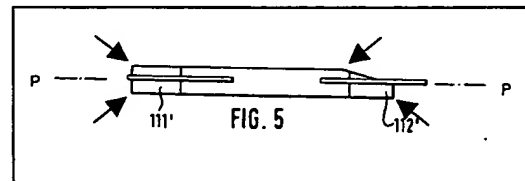
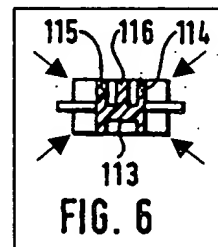
- B. The cited references, alone or in proper combination, do not render claims 1, 8-11, 15-17, 19-21, 24, and 26 obvious and unpatentable under 35 U.S.C. § 103(a).**

In the Office Action mailed on January 24, 2003, the Examiner rejected claims 1, 5, 6, 8-11, 15-17, 19-21, 24, and 26 under 35 U.S.C. § 103(a) as being unpatentable over Anderié in view of Dubner and Kraeuter et al. Office Action, p. 2.

1. U.S. Patent No. 4,922,631 to Anderié (issued May 8, 1990).

Anderié discloses stiffening elements 9, 109 that are embedded in an intermediate sole 1, 101, 201 of a shoe. The stated purpose of the stiffening elements 9, 109 is to restrict bending of the shoe about axes that are transverse to the longitudinal axis of the shoe. Anderié, col. 1, ll. 64-67; col. 6, ll. 51-59. Such bending is stated to be undesirable, because it contributes to lateral instability. Col. 1, ll. 48-51. Depending on their configuration, the stiffening elements 9, 109 either have no adverse effect on, or can restrict the extent of, the torsional motion (i.e., “twistability” of the front sole region relative to the rear sole portion) of the shoe. Col. 2, ll. 20-22; col. 7, ll. 27-31. Torsional flexibility in the shoe is stated to be desirable and supplied by recesses 6, 7, 106, 107, 206, 207. Col. 1, ll. 15-30, 42-44. Stiffening elements 9, 109 counteract the (undesirable) increased bending capability that is a by-product of the recesses 6, 7, 106, 107, 206, 207. Col. 1, ll. 31-34.

The Anderié stiffening element 109 includes an elongate bar 110. Col. 5, ll. 9-12. The bar 110 has limb portions 114, 115, 116 that extend beyond the horizontally extending flat portion 113 of the bar 110. Col. 5, ll. 14-27; Anderié Figure 6. The extent (i.e., surface) of the bar 110 is represented by the rectangular outline in Figure 6. The arrow annotations in the excerpt of Figure 6, at right, denote the corners of this rectangular outline. Figure 5 confirms this interpretation of the extent of the limb portions 114, 115, 116, because the same outline, corners of which are denoted with arrow annotations at right, is depicted in transverse view as enveloping the circular annular walls 111', 112', into which the limb portions 114, 115 blend.



Col. 5, ll. 27-31. Since, as Figure 6 illustrates, the limb portion 116 does not extend beyond the limb portions 114, 115, Figure 5 also confirms that limb portion 116 does not extend beyond the surface of bar 110. Anderié also discloses embodiments where the limb portions 114, 115 do not project beyond the horizontally extending flat portion 113, and where limb portion 116 is eliminated. Col. 8, ll. 13-24.

2. U.S. Patent No. 3,903,621 to Dubner (issued Sept. 9, 1975).

Dubner discloses a supportive innersole construction for footwear that includes an upper innersole element 11 and a lower innersole element 12. Dubner, col. 3, ll. 49-50; col. 5, ll. 1, 17. The upper innersole element 11 extends in the forefoot direction only to the general area of the ball of the foot, not to the toe area. Col. 5, ll. 3-7. The lower innersole element 12 extends under the upper innersole element 11 in the arch area 17. Col. 5, ll. 21-23. Below the upper innersole element 11 and the lower innersole element 12 is a sealed envelope 26 into which a molding mix is injected. Col. 5, ll. 23-25, 29-31. The molding mix (e.g., a synthetic resin) sets (i.e., solidifies) after a short period. Col. 6, ll. 19, 40. The injection typically occurs when a person first wears footwear equipped with the supportive innersole. Col. 6, ll. 20-23. The injection expands the sealed envelope 26, thereby conforming the supportive innersole to the contours of the wearer's foot. Col. 1, ll. 5-7. The result is a rigid supportive innersole that maintains the position of the foot. Col. 1, ll. 24-26. In other words, Dubner discloses the structure and the use of a supportive innersole that may be customized to the contours of an individual wearer's foot.

3. U.S. Patent No. 5,915,820 Kraeuter et al. (issued June 29, 1999).

Kraeuter et al. discloses a structural chassis 52 for a shoe that accommodates flexing of a wearer's foot about forward and lateral push-off axes. Kraeuter et al., col. 5, ll. 29-32; col. 6, ll. 7-9. A transverse notch 62 in the chassis 52 influences the flexibility along the forward axis. Col. 6, ll. 39-41. Similarly, notches 64, 66 influence the flexibility along the lateral push-off axis. Col. 6, ll. 49-51. Notches 68 in the toe portion, as well as notches 56, 58 in the base of the arch support flange 54, permit additional flexibility about their respective positions. Col. 6, ll. 28-32, 66-67. As seen in Kraeuter et al. Figure 5, the notches 56, 58, 64, 66, 68 extend inward from an edge of the chassis 52.

The Office Action states that it would have been obvious, to one of ordinary skill in the art at the time the invention was made, to make the forefoot and heel areas of Anderié span the entire forefoot and heel areas as shown in Dubner to give support to the largest area of the user's foot and to spread out the impact of the foot with the ground over the largest area possible. Office Action, p. 3. The Office Action further states that it would have been obvious to make the forefoot area of the references as modified and applied immediately above, concave as shown in Kraeuter et al., to allow it to follow along the natural contour of the user's foot while giving a feeling of comfort on the user's foot. *Id.*

4. The cited references, alone or in proper combination, do not render claim 1 unpatentable under 35 U.S.C. § 103(a).

Claim 1 is directed to a torsion system for a cycling shoe. One element of the claim pertains to an intermediate portion of the torsion system that allows, in a pre-selected manner, rotation of a contoured forefoot portion of the torsion system relative to a rearfoot portion of the torsion system about a longitudinal axis. The forefoot and rearfoot portions of the torsion system span substantially the entire forefoot and rearfoot areas, respectively, of the shoe sole. The intermediate portion includes a rib that projects beyond an adjacent surface of the torsion system. The pre-selected rotation or "twistability" is a desired and beneficial aspect of Appellant's invention. Appellant respectfully submits that at least these aspects of claim 1 clearly and patentably distinguish the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 1 is nonobvious in view of these references, and that claim 1 is separately patentable from the remaining claims.

Dubner teaches away from both Anderié and Kraeuter et al. because Dubner is directed to a structure (i.e., an innersole device) that maintains the wearer's foot in a selected position, whereas Anderié and Kraeuter et al. include structures that either promote or do not hinder specific flexing of the foot. In particular, Anderié includes a stiffening element 9 that has no adverse effect on torsional motion. Anderié, col. 2, ll. 20-22. The internal chassis of Kraeuter et al. includes notches 56, 58, 62, 64, 68 that permit flexibility at their respective locations. Kraeuter et al., col. 6, ll. 28-67. Accordingly, a person of ordinary skill, on reading Dubner would recognize that Dubner teaches a rigid shoe construction through the use of an injected,

fast-setting compound. This teaching is clearly at odds with the teachings of Anderié and Krauter et al., which are concerned with promoting or maintaining a flexible shoe. Therefore, following the rule of *In re Gurley*, Dubner teaches away from Anderié and Krauter et al. *In re Rudko*, then, dictates that claim 1 is nonobvious because Dubner teaches away from Anderié and Krauter et al.

Another element of claim 1 pertains to the forefoot portion of the torsion system spanning substantially the entire forefoot area of the sole. The Office Action states that the forefoot area of the Anderié structure can be modified to span the entire forefoot area of the sole as shown in Dubner. Office Action, p. 3. This statement is flawed because it misstates the express teaching of Dubner, which requires that the supportive innersole terminate at “the general area of the ball of the foot.” Dubner, col. 5, l. 5; col. 6, ll. 29-30, 43-45; col. 7, l. 42 – col. 8, l. 1. As shown in Dubner Figures 10 and 11, for example, this “general area of the ball of the foot” represents only a portion of Appellant’s claimed entire forefoot area of the sole. The Dubner disclosure specifically contradicts the statement in the Office Action that the supportive innersole “can span substantially the entire forefoot area from the midtarsal are[a] to the toe area.” Office Action, p. 3.

In light of this unambiguous disclosure in Dubner, a person of ordinary skill, on reading the reference, would be led in a direction divergent from the path that Appellant took with respect to the extent of the forefoot portion of the torsion system. Accordingly, there is no motivation to combine Anderié and Dubner as set forth in the Office Action to arrive at this element of Appellant’s claimed invention, providing another reason why the cited references do not render Appellant’s claim 1 obvious.

The Office Action states that the combination of Krauter et al. with Anderié and Dubner renders obvious Appellant’s claimed concave contour. Office Action, p. 3. Appellant respectfully submits that the proposed combination of references is improper and insufficient to support the Examiner’s contention.

Turning first to Krauter et al., this reference teaches that the chassis 52 extends the entire length of the footbed. Krauter et al., col. 6, ll. 11-13, 35-38. In contrast, and as discussed

above, Dubner requires that the supportive innersole terminate at “the general area of the ball of the foot.” Dubner, col. 5, l. 5; col. 6, ll. 29-30, 43-45; col. 7, l. 42 – col. 8, l. 1. The differing extents of the Kraeuter et al. chassis and the Dubner supportive innersole means that Kraeuter et al. clearly teaches away from Dubner with respect to at least this aspect of their disclosures. Accordingly, one of ordinary skill in the art would not be motivated to combine these references. With respect to Appellant’s claimed concave contour, the combination of references that the Office Action proposes must therefore be reduced to include only Kraeuter et al. and Anderié.

Turning to Anderié, the objective of this reference is to restrict bending of the shoe about axes that are transverse to the longitudinal axis of the shoe. Anderié, col. 1, ll. 64-67; col. 6, ll. 51-59. In contrast, Kraeuter et al. discloses notches 64, 66, 68 cut into the chassis 52 to allow the chassis 52 to flex about transverse axes A1’, A2’. Kraeuter et al., col. 6, ll. 39-59. In view of these competing objectives, Kraeuter et al. clearly teaches away from Anderié, meaning that a person of ordinary skill would not be motivated to combine these references. Accordingly, the remaining combination of Kraeuter et al. and Anderié cannot render Appellant’s claim 1 obvious.

Stated differently, Appellant respectfully submits that, for the reasons set forth above, Kraeuter et al. teaches away from (i) a combination with Dubner, and (ii) a combination with Anderié, meaning that the claimed invention is nonobvious per the rule of *In re Rudko*.

Claim 1 is further distinguished over Anderié, Dubner, and Kraeuter et al. because, unlike these references, it includes a rib that projects beyond an adjacent surface of the torsion system. Figures 1 and 2E, RD 20; p. 6, ll. 2-4. The Office Action states that the Anderié “ribs” (in fact, “limb portions” according to the Anderié reference) 114, 115, 116 “clearly project beyond the adjacent surface 113 of the torsion system.” Office Action, p. 5. This statement mischaracterizes the Anderié reference. As discussed above, examination of Anderié Figure 6 shows that the surface of the bar 110 is depicted by the rectangular outline. What the Office Action refers to as the “adjacent surface 113” is actually a horizontally extending flat portion that Anderié Figure 6 clearly shows is a structure that is internal to the bar 110. While the Anderié limb portions 114, 115, 116 may extend beyond this internal structure, they do not extend beyond the surface of the torsion system. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least the rib limitation in Appellant’s claimed invention. Per, e.g., *In*

*re Wright* and *In re Nielson*, a prima facie case of obviousness has not been established with respect to claim 1.

The instant ground of rejection set forth in the Office Action makes no reference to the cycling shoe limitation included in claim 1. Office Action, pp. 2-3. In fact, the Examiner dismisses this limitation as only implying an intended use. Office Action, p. 5. Consequently, it appears that the Examiner has deleted this functional limitation before making a determination of obviousness. This is improper. This limitation must be given patentable weight even if it is the only element that distinguishes the claim over the prior art. See, e.g., *In re Land*, 151 U.S.P.Q. (BNA) 621 (C.C.P.A. 1966), *In re Mills*, 16 U.S.P.Q.2d (BNA) 1430 (Fed. Cir. 1990). Appellant respectfully submits that Anderié, Kraeuter et al., and Dubner neither teach nor disclose a cycling shoe. Accordingly, this limitation of claim 1 further patentably distinguishes claim 1 over these references.

In view of the above, Appellant respectfully submits that the Examiner has failed to establish a prima facie case of obviousness of claim 1.

5. The cited references, alone or in proper combination, do not render claim 8 unpatentable under 35 U.S.C. § 103(a).

Claim 8 is directed to the torsion system of claim 1 wherein the rearfoot portion defines at least one aperture. Figures 1 and 2F, RD 24; p. 6, ll. 18-20. The aperture is centrally disposed. *Id.* Appellant respectfully submits that at least this aspect of claim 8 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 8 is nonobvious in view of these references, and that claim 8 is separately patentable from the remaining claims.

Anderié discloses a plurality of openings 95 and perforations 120 arranged about the periphery of anchoring inserts 92, 93, 118, 119. Anderié, Figures 1 and 8. The openings 95 and perforations 120 purportedly assist with the attachment of the stiffening elements 9, 109 to the front and rear sole portions 103, 104 of the shoe. Anderié, col. 4, ll. 18-22; col. 6, ll. 24-28. Kraeuter et al. discloses arcuate slots 70, 72 in the heel portion of the chassis 52. Kraeuter et al., Figure 5; col. 7, ll. 7-8. The arcuate slots 70, 72 ostensibly influence flexibility in that region of

the chassis 52. Dubner discloses a hole in the shoe sole 51. Dubner, Figure 2; col. 6, ll. 13-15. Synthetic resin is injected into the sealed envelope 26 via this hole, and the hole is then capped with plug 52. Dubner, col. 6, ll. 13-25. Assuming, *arguendo*, that each of these elements in the cited references may be considered an aperture like that Appellant claims, it is clear that each element addresses a different problem: Anderié – attachment, Kraeuter et al. – flexibility, and Dubner – resin injection. Following the rule of *Lindemann*, these references cannot be properly combined to render Appellant’s claim 8, which includes the aperture limitation, obvious.

Further, and as discussed above in connection with independent claim 1, the combination of Anderié, Dubner, and Kraeuter et al. as set forth in the Office Action fails to render claim 1 obvious. With respect to claim 8, which depends from claim 1 and includes the limitations thereof, Appellant respectfully submits that the additional limitation of the rearfoot portion of the torsion system defining at least one aperture further distinguishes Appellant’s claimed invention over the cited references. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least the limitations of the parent claim and this additional limitation in Appellant’s claimed invention. Accordingly, a *prima facie* case of obviousness has not been established with respect to claim 8. *See, e.g., In re Wright and In re Nielson.*

Appellant respectfully submits that at least the aperture element of claim 8 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 8 is nonobvious in view of these references, and that claim 8 is separately patentable from the remaining claims.

6. The cited references, alone or in proper combination, do not render claim 9 unpatentable under 35 U.S.C. § 103(a).

Claim 9 is directed to the torsion system of claim 1 wherein the forefoot portion, the rearfoot portion, and the intermediate portion form a single plate. Figure 1, RD 10; p. 5, l. 22. Appellant respectfully submits that at least this aspect of claim 9 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 9 is nonobvious in view of these references, and that claim 9 is separately patentable from the remaining claims.



Anderié discloses stiffening elements 9, 109 that include at least three separate components: an anchoring insert 92, 119 at one end, another anchoring insert 93, 118 at the opposite end, and plastic wires 91 or an elongate bar 110 between the inserts. Anderié, Figures 1 and 8. Kraeuter et al. discloses a single-component chassis 52 that provides structural support for the wearer's foot while accommodating its natural flexing about particular push-off axes. Kraeuter et al., col. 5, ll. 36-37; col. 6, ll. 7-9. Dubner discloses a multi-part supportive innersole that includes upper and lower elements 11, 12 and an envelope 26 that contains a synthetic resin. Dubner, col. 5, ll. 29-31; col. 6, ll. 18-26. Consequently, a person of ordinary skill, on reading Kraeuter et al., would be discouraged from employing a multi-component structure taught by Anderié and Dubner. Kraeuter et al., then, teaches away from Anderié and Dubner with respect to Appellant's single plate limitation. *In re Gurley*, 31 U.S.P.Q.2d (BNA) at 1131. Accordingly, Appellant's claim 9 is nonobvious. *In re Rudko*.

Further, and as discussed above in connection with independent claim 1, the combination of Anderié, Dubner, and Kraeuter et al. as set forth in the Office Action fails to render claim 1 obvious. With respect to claim 9, which depends from claim 1 and includes the limitations thereof, Appellant respectfully submits that the additional limitation that the forefoot portion, the rearfoot portion, and the intermediate portion of the torsion system form a single plate further distinguishes Appellant's claimed invention over the cited references. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least the limitations of the parent claim and this additional limitation in Appellant's claimed invention. Accordingly, a prima facie case of obviousness has not been established with respect to claim 9. *See, e.g., In re Wright and In re Nielson*.

Appellant respectfully submits that at least the single plate element of claim 9 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 9 is nonobvious in view of these references, and that claim 9 is separately patentable from the remaining claims.

7. The cited references, alone or in proper combination, do not render claim 10 unpatentable under 35 U.S.C. § 103(a).

Claim 10 is directed to the torsion system of claim 9 wherein the plate is substantially rigid in a horizontal plane. P. 5, ll. 22-23. Appellant respectfully submits that at least this aspect of claim 10 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, Kraeuter et al., and that claim 10 is nonobvious in view of these references, and that claim 10 is separately patentable from the remaining claims.

Anderié discloses stiffening elements 9, 109 that are not themselves resistant to bending but, when installed in a shoe bottom, resist bending of the overall shoe. Anderié, col. 2, ll. 10-16. Anderié further discloses that this configuration has weight advantages compared to using stiffening means that are resistant to bending. Col. 2, ll. 26-32. The Dubner innersole, by virtue of the introduction of the synthetic resin, rigidly supports the wearer's foot. Dubner, col. 1, ll. 24-26. The Kraeuter et al. chassis 52 includes notches 62, 64, 66 that promote flexibility of the chassis 52 about their respective locations. Kraeuter et al., col. 6, ll. 39-41, 49-59.

Consequently, a person of ordinary skill, on reading Dubner, would be discouraged from employing the flexible stiffening means taught by Anderié and flexible structure taught by Kraeuter et al. Dubner, then, teaches away from Anderié and Kraeuter et al. with respect to Appellant's substantially rigid limitation. *In re Gurley*, 31 U.S.P.Q.2d (BNA) at 1131.

Accordingly, Appellant's claim 10 is nonobvious. *In re Rudko*.

Further, and as discussed above in connection with independent claim 1, the combination of Anderié, Dubner, and Kraeuter et al. as set forth in the Office Action fails to render claim 1 obvious. With respect to claim 10, which depends directly from claim 9 and indirectly from claim 1, and includes all of the limitations of each, Appellant respectfully submits that the additional limitation that the single plate of the torsion system is substantially rigid in a horizontal plane further distinguishes Appellant's claimed invention over the cited references. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least the limitations of the parent claims and this additional limitation in Appellant's claimed invention. Accordingly, a prima facie case of obviousness has not been established with respect to claim 10. *See, e.g., In re Wright and In re Nielson*.

Appellant respectfully submits that at least the substantially rigid element of claim 10 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 10 is nonobvious in view of these references, and that claim 10 is separately patentable from the remaining claims.

8. The cited references, alone or in proper combination, do not render claim 11 unpatentable under 35 U.S.C. § 103(a).

Claim 11 is directed to the torsion system of claim 9 wherein the plate is between about 1-15 mm thick. P. 3, ll. 26-27. Appellant respectfully submits that at least this aspect of claim 11 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 11 is nonobvious in view of these references, and that claim 11 is separately patentable from the remaining claims.

Anderié discloses stiffening elements that include plastic wires 91 having a diameter of 1.5 mm and anchoring inserts 118, 119 having a thickness of about 1 mm. Anderié, col. 4, ll. 10-12; col. 5, ll. 48-49. Increasing thickness leads to undesirable torsional stiffness, and must be avoided. Col. 4, ll. 46-51. Kraeuter et al. discloses a single-component chassis 152 that provides structural support for the wearer's foot and includes an arch support flange 54 and a heel portion 153. Kraeuter et al., col. 7, ll. 13-29. The arch support flange 54 and the heel portion 153 are about 3 mm thick, and the remainder of the chassis 152 is about 2.5 mm thick. Col. 7, ll. 29-32. Dubner discloses a supportive innersole for a shoe where the innersole includes an envelope 26 that expands to fill gaps between the wearer's foot and the shoe. Dubner, col. 6, l. 67 – col. 7, l. 4. Dubner does not prescribe limits to this expansion (i.e., thickness) of the supportive innersole, since doing so would conflict with Dubner's objective of forcing the upper surface of the insole to conform to the many variations of foot contours. Col. 2, l. 47; col. 4, ll. 3-4. In other words, Dubner teaches an insole with a wide range of thicknesses to conform with different foot contours. Consequently, a person of ordinary skill, on reading Dubner, would be discouraged from following its teaching of unconstrained innersole thickness in light of the maximum or specific thicknesses taught by Anderié and Kraeuter et al., respectively. Dubner, then, teaches away from Anderié and Kraeuter et al. with respect to Appellant's thickness limitation in claim

11. *In re Gurley*, 31 U.S.P.Q.2d (BNA) at 1131. Accordingly, Appellant's claim 11 is nonobvious. *In re Rudko*.

Further, and as discussed above in connection with independent claim 1, the combination of Anderié, Dubner, and Kraeuter et al. as set forth in the Office Action fails to render claim 1 obvious. With respect to claim 11, which depends directly from claim 9 and indirectly from claim 1, and includes all of the limitations of each, Appellant respectfully submits that the additional limitation regarding intermediate portion thickness further distinguishes Appellant's claimed invention over the cited references. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least the limitations of the parent claims and this additional limitation in Appellant's claimed invention. Accordingly, a prima facie case of obviousness has not been established with respect to claim 11. *See, e.g., In re Wright and In re Nielson*.

Appellant respectfully submits that at least the thickness limitation of claim 11 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 11 is nonobvious in view of these references, and that claim 11 is separately patentable from the remaining claims.

9. The cited references, alone or in proper combination, do not render claim 15 unpatentable under 35 U.S.C. § 103(a).

Claim 15 is directed to the torsion system of claim 9 wherein a width of the intermediate portion of the plate is narrower than the forefoot and rearfoot portions. Figure 1, RD 12, 14, 16; p. 5, ll. 26-28. Appellant respectfully submits that at least this aspect of claim 15 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 15 is nonobvious in view of these references, and that claim 15 is separately patentable from the remaining claims.

Kraeuter et al. discloses a single-component chassis 152 that provides structural support for the wearer's foot and includes an arch support flange 54 and a heel portion 153. Kraeuter et al., col. 7, ll. 13-29. The arch support flange 54 is located in a central portion of the chassis 152. Kraeuter et al., Figures 5 and 6. Examination of Figures 5 and 6 shows that the width of this

central portion, which includes the arch support flange 54, is greater than the width of the rearfoot portion of the chassis 152. Anderié discloses plastic wires 91 and an elongate bar 110 with anchoring inserts 92, 93, 118, 119 at either end. Anderié, Figures 1 and 8. The anchoring inserts 92, 93, 118, 119 span a wider dimension than the plastic wires 91 and the elongate bar 110. *Id.* Dubner discloses a forward portion 16 and a heel portion 18 that are wider than the arch portion 17 therebetween. Dubner, Figure 3. Stated differently, Kraeuter et al. teaches an intermediate portion that is wider than the rearfoot portion, while Anderié and Dubner teach the opposite configuration where the intermediate portion is narrower than the rearfoot portion. Consequently, a person of ordinary skill, on reading Kraeuter et al., would be discouraged from employing a structure taught by Anderié and Dubner. Kraeuter et al., then, teaches away from Anderié and Dubner with respect to Appellant's limitation regarding the width of the intermediate portion. *In re Gurley*, 31 U.S.P.Q.2d (BNA) at 1131. Accordingly, Appellant's claim 15 is nonobvious. *In re Rudko*.

Further, and as discussed above in connection with independent claim 1, the combination of Anderié, Dubner, and Kraeuter et al. as set forth in the Office Action fails to render claim 1 obvious. With respect to claim 15, which depends directly from claim 9 and indirectly from claim 1, and includes all of the limitations of each, Appellant respectfully submits that the additional limitation that the width of the intermediate portion of the plate is narrower than the forefoot and rearfoot portions of the torsion system further distinguishes Appellant's claimed invention over the cited references. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least the limitations of the parent claims and this additional limitation in Appellant's claimed invention. Accordingly, a *prima facie* case of obviousness has not been established with respect to claim 15. *See, e.g., In re Wright and In re Nielson*.

Appellant respectfully submits that at least the width limitation of claim 15 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 15 is nonobvious in view of these references, and that claim 15 is separately patentable from the remaining claims.

10. The cited references, alone or in proper combination, do not render claims 16, 17, and 19 unpatentable under 35 U.S.C. § 103(a).

Claim 16 is directed to the torsion system of claim 9 wherein the plate comprises nylon. P. 7, l. 12. Claim 17 is directed to the torsion system of claim 9 wherein the plate comprises a composite material. P. 7, l. 13. Claim 19 is directed to the torsion system of claim 17 wherein the composite material is fiberglass. P. 7, l. 14.

Appellant respectfully submits that at least the plate material limitations of claims 16, 17, and 19 clearly and patentably distinguish the claimed invention over Anderié, Dubner, and Kraeuter et al., that claims 16, 17, and 19 are nonobvious in view of these references, and that claims 16, 17, and 19 are each separately patentable from the remaining claims.

Anderié discloses plastic wires 91 that may be constructed from nylon and a stiffening element 109 that may be a composite body. Anderié, col. 4, l. 7; col. 8, ll. 41-42. Kraeuter et al. discloses a chassis 52 that is made of vinyl or plastic. Kraeuter et al., col. 6, ll. 13-15. Dubner discloses the use of a synthetic resin injected into an envelope 26. Dubner, col. 6, ll. 18-26. Consequently, Anderié and Kraeuter et al. teach the use of materials that provide flexibility, while Dubner teaches the use of a material that provides rigidity. A person of ordinary skill, on reading Dubner, would be discouraged from employing the materials taught by Anderié and Kraeuter et al. Dubner, then, teaches away from Anderié and Kraeuter et al. with respect to Appellant's limitations regarding the plate material in claims 16, 17, and 19. *In re Gurley*, 31 U.S.P.Q.2d (BNA) at 1131. Accordingly, Appellant's claims 16, 17, and 19 are nonobvious. *In re Rudko*. Since the Dubner rigidity teaches away from the Anderié and Kraeuter et al. flexibility for the specific nylon, composite, and fiberglass plate materials in each of claims 16, 17, and 19, these claims are separately patentable as well.

Further, and as discussed above in connection with independent claim 1, the combination of Anderié, Dubner, and Kraeuter et al. as set forth in the Office Action fails to render claim 1 obvious. Claims 16 and 17 depend directly from claim 9 and indirectly from claim 1, and include all of the limitations of each. Claim 19 depends directly from claim 17 and indirectly from claims 1 and 9, and includes all of the limitations of each. Consequently, Appellant respectfully submits that the additional limitations in claims 16, 17, and 19 regarding plate

material further distinguishes Appellant's claimed invention over the cited references. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least the limitations of the parent claims and the additional limitations in Appellant's claimed invention. Accordingly, a prima facie case of obviousness has not been established with respect to claims 16, 17, and 19. *See, e.g., In re Wright and In re Nielson.*

Appellant respectfully submits that at least the plate material elements of claims 16, 17, and 19 clearly and patentably distinguish the claimed invention over Anderié, Dubner, and Kraeuter et al., that claims 16, 17, and 19 are nonobvious in view of these references, and that claims 16, 17, and 19 are separately patentable from the remaining claims.

11. The cited references, alone or in proper combination, do not render claim 20 unpatentable under 35 U.S.C. § 103(a).

Claim 20 is directed to the torsion system of claim 9 wherein the forefoot portion and rearfoot portion comprise material properties different than the intermediate portion. P. 6, ll. 4-8; p. 6, l. 26 – p. 7, l. 1. Appellant respectfully submits that at least this aspect of claim 20 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 20 is nonobvious in view of these references, and that claim 20 is separately patentable from the remaining claims.

Anderié discloses that the plastic material comprising the stiffening element 109 need not be of the same type throughout the stiffening element 109. Anderié, col. 8, ll. 26-29. Nevertheless, Anderié further teaches that the different plastic materials are configured such that one material is above, and the other material is below, a plane P-P that is in the stiffening element 109 and is coplanar with the lower surface of the anchoring inserts 118, 119. Col. 8, ll. 29-41. In other words, each of the different plastic materials extends the entire length of the stiffening element 109. These different plastic materials span across the forefoot, intermediate, and rearfoot portions, and do not create different material properties therebetween, as required by Appellant's claim 20.

Kraeuter et al. discloses “flex zones” that result from varying the composition of the material used in a chassis 52. Kraeuter et al., col. 9, ll. 49-52. Kraeuter et al. does not teach a particular material configuration, such as Appellant claims, for the so-called flex zones.

Dubner discloses a supportive innersole where an injected synthetic resin is used in and throughout an envelope 26 to provide rigid support. Dubner, col. 6, ll. 23-25. The supportive innersole is attached throughout a shoe to provide the required support. Col. 7, ll. 29-32. Stated differently, Dubner specifically teaches a structure with a uniform, not a varying, degree of support between the forefoot, intermediate, and rearfoot portions. Consequently, a person of ordinary skill, on reading Dubner, would be discouraged from employing a varying material configuration taught by Anderié and Kraeuter et al. Dubner, then, teaches away from Anderié and Kraeuter et al. with respect to Appellant’s limitation regarding the different material properties of the forefoot and rearfoot portions of the torsion system relative to the intermediate portion. *In re Gurley*, 31 U.S.P.Q.2d (BNA) at 1131. Accordingly, Appellant’s claim 20 is nonobvious. *In re Rudko*.

Further, and as discussed above in connection with independent claim 1, the combination of Anderié, Dubner, and Kraeuter et al. as set forth in the Office Action fails to render claim 1 obvious. With respect to claim 20, which depends directly from claim 9 and indirectly from claim 1, and includes all of the limitations of each, Appellant respectfully submits that the additional limitation that the forefoot portion and rearfoot portion comprise material properties different than the intermediate portion of the torsion system further distinguishes Appellant’s claimed invention over the cited references. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least the limitations of the parent claims and this additional limitation in Appellant’s claimed invention. Accordingly, a prima facie case of obviousness has not been established with respect to claim 20. *See, e.g., In re Wright and In re Nielson*.

Appellant respectfully submits that at least the differing material property limitation of claim 20 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 20 is nonobvious in view of these references, and that claim 20 is separately patentable from the remaining claims.



12. The cited references, alone or in proper combination, do not render claim 21 unpatentable under 35 U.S.C. § 103(a).

Claim 21 is directed to a cycling shoe that includes a torsion system. The torsion system includes a sole plate that is rigid in a horizontal plane. The sole plate has a longitudinal axis, a contoured forefoot portion, a rearfoot portion, and an intermediate portion. The forefoot and rearfoot portions of the sole plate span substantially the entire forefoot and rearfoot areas, respectively, of the shoe sole. The intermediate portion couples the forefoot portion and the rearfoot portion, and is constructed of a material that allows, in a pre-selected manner, rotation of the forefoot portion relative to the rearfoot portion about the longitudinal axis. The intermediate portion also includes a rib that projects beyond an adjacent surface of the sole plate. The pre-selected rotation or “twistability” is a desired and beneficial aspect of Appellant’s invention. Appellant respectfully submits that at least these aspects of claim 21 clearly and patentably distinguish the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 21 is nonobvious in view of these references, and that claim 21 is separately patentable from the remaining claims.

Anderié, Dubner, and Kraeuter et al. neither teach nor suggest a cycling shoe. Anderié is directed to sports shoes in general, but does not disclose a cycling shoe. In contrast to Appellant’s claimed invention, Anderié neither teaches nor suggests that any constraint on torsional movement it may provide also limits a cyclist’s knee looping. P. 2, ll. 4-6; 13-16. The Dubner supportive innersole is depicted in walking shoes and purportedly improves the action of the foot when walking. Dubner, Figures 1, 2, 10, and 11; col. 4, ll. 24-27. Although Dubner discloses that a modified form of its supportive innersole may be used in shoes designed for other uses, cycling is not a specified use. Col. 7, ll. 13-15. Finally, Kraeuter et al. provides a chassis 52, 152 that facilitates flexing along certain axes. Kraeuter et al., col. 5, ll. 29-32; col. 6, ll. 7-9. Kraeuter et al. includes notches 56, 58 that apparently allow adjustment of torsional flexibility, but Kraeuter et al. does not disclose whether the torsional movement pertains to the forefoot portion of the chassis 52, 152 relative to the rearfoot portion of the chassis 52, 152. Col. 6, ll. 28-32. In contrast with Appellant’s claimed invention, Kraeuter et al. neither teaches nor suggests control of torsional movement to limit a cyclist’s knee looping. P. 2, ll. 4-6; 13-16.

Accordingly, in addition to the lack of disclosure of a cycling shoe in Anderié, Dubner, and Krauter et al., their discussion of torsional movement purportedly provided by their respective inventions is in response to problems that are undisclosed or different from those Appellant addresses. Consequently, Anderié, Dubner, and Krauter et al. cannot be properly combined to render Appellant's claim 21 obvious. *Lindemann*.

The discussion above regarding claim 1 applies to claim 21 as well. For example, Dubner teaches away from both Anderié and Krauter et al. because Dubner is directed to a structure (i.e., an innersole device) that maintains the wearer's foot in a selected position, whereas Anderié and Krauter et al. include structures that either promote or do not hinder specific flexing of the foot. *In re Rudko* dictates that claim 21 is nonobvious because Dubner teaches away from Anderié and Krauter et al.

Further, Dubner teaches limiting the extent of an innersole element 11 to less than the entire forefoot area of the sole. Assuming, *arguendo*, that the innersole element 11 corresponds to Appellant's sole plate, which it does not, there is no motivation to combine Dubner with Anderié as set forth in the Office Action, p. 3, to arrive at Appellant's claimed forefoot portion of the sole plate that spans substantially the entire forefoot area of the sole. Consequently, Dubner teaches away from Anderié. Similarly, Krauter et al. teaches away from Dubner because the Krauter et al. chassis 52, 152 also extends the length of the footbed. Krauter et al., col. 6, ll. 11-13, 35-38. Since Krauter et al. employs notches to promote flexing about transverse axes and Anderié restricts bending about certain transverse axes, Krauter et al. teaches away from Anderié as well. As was the case with Appellant's claim 1, the aforementioned references teach away from each other at least as described above. Accordingly, per the rule of *In re Rudko*, Appellant's claim 21 is nonobvious.

Claim 21 is further distinguished over Anderié, Krauter et al., and Dubner because, unlike these references, it includes a rib that projects beyond an adjacent surface of the sole plate. Figures 1 and 2E, RD 20; p. 6, ll. 2-4. The characterization of the Anderié "ribs" in the Office Action is improper, as described above in connection with claim 1. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least this rib

limitation in Appellant's claimed invention. Accordingly, a prima facie case of obviousness has not been established with respect to claim 21. *See, e.g., In re Wright* and *In re Nielson*.

In view of the above, Appellant respectfully submits that the cycling shoe and other limitations in claim 21 clearly and patentably distinguish the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 21 is nonobvious in view of these references, and that claim 21 is separately patentable from the remaining claims.

13. The cited references, alone or in proper combination, do not render claim 24 unpatentable under 35 U.S.C. § 103(a).

Claim 24 is directed to the cycling shoe of claim 21 further including an outsole. P. 5, ll. 8-14. Appellant respectfully submits that at least this aspect of claim 24 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 24 is nonobvious in view of these references, and that claim 24 is separately patentable from the remaining claims.

Anderié discloses an outsole that includes recesses 6, 7 to decouple the front sole region 3 from the rear sole portion 4. Anderié, col. 3, ll. 51-65. The Anderié outsole, then, is an integral part of the Anderié shoe bottom. Dubner depicts what appears to be an outsole in, for example, Figure 1. An objective of Kraeuter et al., however, is to minimize the extent of an outsole in favor of a chassis 52, 152. Accordingly, with respect to the Appellant's claimed outsole, Kraeuter et al. teaches away from Anderié and Dubner since a person of ordinary skill, on reading Kraeuter et al., would be discouraged from employing outsoles of the kind and extent disclosed by Anderié and Dubner. Following the rule of *In re Rudko*, Appellant's claim 24 is nonobvious.

Further, and as discussed above in connection with independent claim 21, the combination of Anderié, Dubner, and Kraeuter et al. as set forth in the Office Action fails to render claim 21 obvious. With respect to claim 24, which depends from claim 21 and includes all of the limitations thereof, Appellant respectfully submits that the additional limitation of the outsole further distinguishes Appellant's claimed invention over the cited references. The resulting combination of these references, as set forth in the Office Action, fails to show or

suggest at least the limitations of the parent claim and this additional limitation in Appellant's claimed invention. Accordingly, a prima facie case of obviousness has not been established with respect to claim 24. *See, e.g., In re Wright* and *In re Nielson*.

Appellant respectfully submits that at least the outsole element of claim 24 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and Kraeuter et al., that claim 24 is nonobvious in view of these references, and that claim 24 is separately patentable from the remaining claims.

14. The cited references, alone or in proper combination, do not render claim 26 unpatentable under 35 U.S.C. § 103(a).

Claim 26 is directed to a torsion system for a cycling shoe. One element of the claim pertains to an intermediate portion of the torsion system that allows, in a pre-selected manner, rotation of the forefoot portion of the torsion system relative to the rearfoot portion of the torsion system about a longitudinal axis. The forefoot and rearfoot portions of the torsion system span the forefoot and rearfoot areas, respectively, of the shoe sole. The intermediate portion includes a rib that projects beyond an adjacent surface of the torsion system. The pre-selected rotation or "twistability" is a desired and beneficial aspect of Appellant's invention. Appellant respectfully submits that at least these aspects of claim 26 clearly and patentably distinguish the claimed invention over Anderié, Dubner, and Kraeuter et al., and that claim 26 is nonobvious in view of these references.

Appellant's claim 26 is similar to claim 1, with a difference being that the forefoot and rearfoot portions of the torsion system are not required to span substantially the entire forefoot and rearfoot areas, respectively, of the sole. Nevertheless, parts of the discussion above regarding claim 1 also apply to claim 26. For example, Dubner teaches away from both Anderié and Kraeuter et al. because Dubner is directed to an innersole device that maintains the wearer's foot in a selected position, whereas Anderié and Kraeuter et al. include structures that either promote or do not hinder specific flexing of the foot. Following the rule of *In re Rudko*, Appellant's claim 26 is nonobvious.

With respect to Appellant's claimed structural configuration (i.e., contour), Kraeuter et al. teaches away from Dubner at least because each reference requires a different extent for their disclosed apparatus (e.g., the Kraeuter et al. chassis 52 and the Dubner supportive insole). Consequently, the combination of Anderié, Dubner, and Kraeuter et al. as set forth in the Office Action is improper: Dubner cannot be included. Considering the remaining combination of Anderié and Kraeuter et al., Anderié restricts bending of the shoe about axes that are transverse to the longitudinal axis of the shoe, while Kraeuter et al. incorporates features (e.g., notches 62, 66, 68) that promote such bending. Kraeuter et al., then, teaches away from Anderié. Since Kraeuter et al. teaches away from both of the references in the combination set forth by the Office Action, this combination does not render Appellant's claim 26 obvious. *In re Rudko*.

Claim 26 is further distinguished over Anderié, Kraeuter et al., and Dubner because, unlike these references, it includes a rib that projects beyond an adjacent surface of the torsion system. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least this structural rib limitation in Appellant's claimed invention. Accordingly, a prima facie case of obviousness has not been established with respect to claim 26. *See, e.g., In re Wright and In re Nielson*.

The instant ground of rejection set forth in the Office Action makes no reference to the cycling shoe limitation included in claim 26. Office Action, pp. 2-3. In fact, the Examiner dismisses this limitation as only implying an intended use. Office Action, p. 5. Consequently, it appears that the Examiner has deleted this functional limitation before making a determination of obviousness. This is improper. This limitation must be given patentable weight even if it is the only element that distinguishes the claim over the prior art. *See, e.g., In re Land and In re Mills*. Appellant respectfully submits that Anderié, Kraeuter et al., and Dubner neither teach nor disclose a cycling shoe. Accordingly, this limitation of claim 26 further patentably distinguishes claim 26 over these references.

In view of the above, Appellant respectfully submits that the Examiner has failed to establish a prima facie case of obviousness of claim 26.

**II. Claims 23 and 25 constitute nonobvious subject matter and are patentable over Anderié (U.S. Patent No. 4,922,631) in view of Dubner (U.S. Patent No. 3,903,621) and Kraeuter et al. (U.S. Patent No. 5,915,820), in further view of Nagano et al. (U.S. Patent No. 5,446,977).**

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**A. The cited references, alone or in proper combination, do not render claims 23 and 25 obvious and unpatentable under 35 U.S.C. § 103(a).**

In the Office Action, the Examiner rejected claims 23 and 25 under 35 U.S.C. § 103(a) as being unpatentable over Anderié in view of Dubner and Kraeuter et al., in further view of Nagano et al. Office Action, p. 3.

1. U.S. Patent No. 5,446,977 to Nagano et al. (issued Sept. 5, 1995).

Nagano et al. discloses a cycling shoe with a cleat-attaching portion that selectively allows the addition or removal of a cleat. Nagano et al., col. 1, ll. 45-48. Anti-slip projections 13a, 13b, 13c are arranged on the bottom sole 4 and operate to position the shoe when placed in a non-cleat attaching pedal. Col. 7, ll. 35-39. Consequently, the extent of movement of the toe is constrained to promote “smooth and comfortable” pedaling. Col. 7, ll. 30-34.

The Office Action states that it would have been obvious to place the torsion system of the Anderié, Dubner, and Kraeuter et al. references into a bicycle shoe, such as that shown in Nagano et al., to aid in keeping the foot properly located on the pedal, to get the most work out of the energy expelled by the rider, and to help in correcting the twisting of the user’s leg due to the pedaling of the bicycle. Office Action, pp. 3-4.

2. The cited references, alone or in proper combination, do not render claims 23 and 25 unpatentable under 35 U.S.C. § 103(a).

Claim 23 is directed to the cycling shoe of claim 21 further including an upper. Figure 4, RD 30; p. 7, ll. 10-11. Claim 25 is directed to the cycling shoe of claim 21 further including a cleat attachment system disposed on the forefoot portion. Figures 1 and 2C, RD 18; p. 6, l. 14-15; Figure 3, RD 180; p. 7, ll. 8-9. Appellant respectfully submits that at least the upper and cleat attachment system limitations of claims 23 and 25, respectively, clearly and patentably distinguish the claimed invention over Anderié, Dubner, Kraeuter et al., and Nagano et al., that

claims 23 and 25 are nonobvious in view of these references, and that claims 23 and 25 are separately patentable from the remaining claims.

Nagano et al. discloses the use of reinforcing portions 14, 14' placed on the bottom sole 4 where the shoe 1 flexes most easily during walking. Nagano et al., col. 5, ll. 53-67. The purpose of the reinforcing portions 14, 14' is to reinforce "against repeated flextion [sic] of the shoe [1]." *Id.* A cleat 5 and the attendant connecting means renders the nearby portion of the sole 3 less flexible than the rest of the sole 3. Col. 6, ll. 8-13. Accordingly, Nagano et al., like Anderié and Dubner, teaches a structure that resists bending or flexing. This is in contrast to Kraeuter et al., which teaches a chassis 52, 152 that promotes bending or flexing about certain axes. A person of ordinary skill, then, on reading Nagano et al., Anderié, and Dubner, would have no motivation to combine their teachings with that of Kraeuter et al. Consequently, as a threshold matter, the combination of Anderié, Dubner, Kraeuter et al., and Nagano et al. as set forth in the Office Action is improper and does not render Appellant's claimed invention obvious. *In re Rudko*.

With respect to claim 23, Anderié, unlike Dubner, Kraeuter et al., and Nagano et al., neither teaches nor suggests Appellant's claimed upper. Regarding claim 25, both Dubner and Kraeuter et al. neither teach nor disclose Appellant's claimed cleat attachment system. Further, the Dubner supportive innersole relies on the integrity of the seal of the envelope 26 that contains the synthetic resin. Including the Nagano et al. cleat structure in Dubner would likely pierce the Dubner envelope 26, because Nagano et al. includes bolts 11 and nut 12 that penetrate the shoe. This would render Dubner nonfunctional, meaning that Nagano et al. teaches away from Dubner for this reason as well. If, when combined, the references "would produce a seemingly inoperative device," then they teach away from their combination. *Tec Air, Inc. v. Denso Mfg. Mich. Inc.*, 52 U.S.P.Q.2d (BNA) 1294, 1298 (Fed. Cir. 1999) (quoting *In re Spinnoble*, 160 U.S.P.Q. (BNA) 237, 244 (C.C.P.A. 1969)).

Similarly, including the Nagano et al. cleat structure in Kraeuter et al. would render the latter nonfunctional because the cleat would be positioned as in Nagano et al. (i.e., in the forefoot area of Kraeuter et al.). Since the Nagano et al. cleat does not flex (col. 6, ll. 8-9), its presence in the Kraeuter et al. chassis 52, 152 would interfere with the desired bending about the notch 62. Accordingly, Nagano et al. teaches away from Kraeuter et al. for this reason as well.

Since Anderié, Dubner, Kraeuter et al., and Nagano et al. teach away from each other as described above, Appellant respectfully submits that their combination as set forth in the Office Action is improper and does not, per the rule of *In re Rudko*, render Appellant's claims 23 and 25 obvious.

Further, and as discussed above in connection with independent claim 21, the combination of Anderié, Dubner, and Kraeuter et al. as set forth in the Office Action fails to render claim 21 obvious. Appellant respectfully submits that Nagano et al. fails to cure the deficiencies of these references regarding claim 21. With respect to claims 23 and 25, which depend directly from claim 21 and include the limitations thereof, Appellant respectfully submits that the additional limitations of the upper and cleat attachment system further distinguishes Appellant's claimed invention over the cited references. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least the limitations of the parent claim and these additional limitations in Appellant's claimed invention. Accordingly, a prima facie case of obviousness has not been established with respect to claims 23 and 25. *See, e.g., In re Wright and In re Nielson.*

Appellant respectfully submits that at least the upper and cleat attachment elements of claims 23 and 25 clearly and patentably distinguish the claimed invention over Anderié, Dubner, Kraeuter et al., and Nagano et al., that claims 23 and 25 are nonobvious in view of these references, and that claims 23 and 25 are separately patentable from the remaining claims.

**III. Claims 2-4, 11-14, and 18 constitute nonobvious subject matter and are patentable over Anderié (U.S. Patent No. 4,922,631), in view of Dubner (U.S. Patent No. 3,903,621) and Kraeuter et al. (U.S. Patent No. 5,915,820).**

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**A. The cited references, alone or in proper combination, do not render claims 2-4, 11-14, and 18 obvious and unpatentable under 35 U.S.C. § 103(a).**

In the Office Action, the Examiner rejected claims 2-4, 11-14, and 18 under 35 U.S.C. § 103(a) as being unpatentable over Anderié in view of Dubner and Kraeuter et al. Office Action, p. 4.



As an initial matter, it appears that this ground of rejection is the same as that addressed in Section I, above, albeit with seven different claims identified. Appellant notes that the instant ground of rejection also involves an eighth claim (claim 11) that was part of the earlier ground of rejection. Consequently, Appellant incorporates in this Section the discussion of claim 11 from Section I, above.

The Office Action states that it would have been obvious, to one of ordinary skill in the art at the time the invention was made, to find the proper angle of rotation of the forefoot portion to the rearfoot portion and the thickness and material of the intermediate portion that would best compensate for the twisting motion performed by the knee on the foot. Office Action, p. 4.

1. The cited references, alone or in proper combination, do not render claims 2-4 unpatentable under 35 U.S.C. § 103(a).

Claim 2 is directed to the torsion system of claim 1, wherein the forefoot portion and rearfoot portion rotate between about 5-25 degrees relative to each other about the longitudinal axis at 35 Newtons of torsional load. P. 3, ll. 5-6. Claim 3 is directed to the torsion system of claim 1 wherein the forefoot portion and rearfoot portion rotate between about 10-20 degrees relative to each other about the longitudinal axis at 35 Newtons of torsional load. P. 3, ll. 6-8. Claim 4 is directed to the torsion system of claim 1 wherein the forefoot portion and rearfoot portion rotate about 10 degrees relative to each other about the longitudinal axis at 35 Newtons of torsional load. P. 3, ll. 7-8.

Appellant respectfully submits that at least the rotational limitations of claims 2-4 clearly and patentably distinguish the claimed invention over Anderié, Dubner, and Kraeuter et al., that claims 2-4 are nonobvious in view of these references, and that claims 2-4 are separately patentable from the remaining claims.

The Office Action states that “it would have been a mere matter of testing and optimization to find the degree of rotation of the forefoot portion with respect to the rearfoot portion” as Appellant claims in claims 2-4. Office Action, p. 4. As a threshold matter, the Office Action fails to indicate where the cited references disclose any rotational angular range for a desirable degree of rotation as a function of torsional load. Anderié does disclose opposing

twisting of the forefoot relative to the rearfoot at an angle of 60 degrees or more. Anderié, col. 7, ll. 30-32; col. 8, ll. 52-57. Nevertheless, Anderié does not disclose a range of minimum and maximum angular values as does Appellant, but only an adjustable upper limit resulting from the location of the plane P-P relative to the anchoring inserts 118, 119. *Id.* Anderié offers no rationale for the adjustable upper limit, and does not disclose associated torsional loads. Consequently, there is no range of minimum and maximum angular values and associated torsional loading that Anderié teaches that a person of ordinary skill in the art would, at the time the invention was made, have been able to optimize.

The remaining references the Examiner cites do not disclose a rotational angular range as a function of torsional load. Dubner teaches “a rigid construction to generally maintain a foot in a selected position.” Dubner, col. 1, ll. 24-26. In other words, Dubner teaches a structure that does not allow rotation. Kraeuter et al. teaches flexing about forward and lateral push-off axes that are in the plane of the chassis 52 and intersect each other at various angles. Kraeuter et al., col. 6, ll. 56-65. Clearly, this Kraeuter et al. flexing is not torsional, and the angles disclosed are unrelated to the extent of the flexing. Although Kraeuter et al. mentions torsional flexing, it does not disclose any corresponding angular range or torsional load. Col. 6, ll. 28-32.

Appellant recognizes that the discovery of an optimum range in a known process is presumed to be obvious if it is discovered through routine experimentation. *In re Aller*, 105 U.S.P.Q. (BNA) 233, 235 (C.C.P.A. 1955). Nevertheless, this rule does not apply if the prior art did not optimize, or suggest to optimize, the parameter optimized by the invention. *In re Antonie*, 195 U.S.P.Q. (BNA) 6, 8 (C.C.P.A. 1977). The Examiner’s “testing and optimization” basis for the instant ground of rejection is flawed because the references cited fail to teach or suggest optimization of torsional rotation as a function of torsional load. As discussed above, Dubner teaches away from any torsional flexing. Although Anderié and Kraeuter et al. mention torsional flexing, neither teaches nor suggests optimizing its angular rotational range as a function of torsional loading. Dubner, Anderié, and Kraeuter et al. neither disclose nor suggest specific preferred angular ranges of torsional rotation, as Appellant claims in claims 2-4. Accordingly, Appellant’s claims 2-4, each to specific preferred angular ranges of torsional rotation as a function of claimed torsional load, are nonobvious and separately patentable in view

of references that are silent on, or teach away from, this attribute. Further, since Dubner teaches away from torsional rotation of any extent, Dubner teaches away from both Anderié and Kraeuter et al. *In re Rudko* dictates, therefore, that Appellant's claims 2-4 are nonobvious in view of these references.

Further, and as discussed above in connection with independent claim 1, the combination of Anderié, Dubner, and Kraeuter et al. as set forth in the Office Action fails to render claim 1 obvious. With respect to claims 2-4, which depend directly from claim 1 and include all of the limitations thereof, Appellant respectfully submits that the additional limitations regarding rotation and loading further distinguishes Appellant's claimed invention over the cited references. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least the limitations of the parent claim and the additional limitations of claims 2-4 in Appellant's claimed invention. Accordingly, a prima facie case of obviousness has not been established with respect to claims 2-4. *See, e.g., In re Wright and In re Nielson.*

Appellant respectfully submits that at least the rotational (angle) and load limitations of claims 2-4 clearly and patentably distinguish the claimed invention over Anderié, Dubner, and Kraeuter et al., that claims 2-4 are nonobvious in view of these references, and that claims 2-4 are separately patentable from the remaining claims.

2. The cited references, alone or in proper combination, do not render claims 11-14 unpatentable under 35 U.S.C. § 103(a).

Claim 11 is directed to the torsion system of claim 9 wherein the plate is between about 1-15 mm thick. P. 3, ll. 26-27. Claim 12 is directed to the torsion system of claim 9 wherein the plate is between about 3-10 mm thick. P. 3, l. 27. Claim 13 is directed to the torsion system of claim 9 wherein the plate is between about 5-8 mm thick. P. 3, ll. 27-28. Claim 14 is directed to the torsion system of claim 9 wherein a thickness of the plate is less in the intermediate portion than in the forefoot and rearfoot portions of the torsion system. Figure 1, RD 12, 14, 16; p. 5, ll. 26-28; Figure 3, RD 120, 140, 160; p. 6, ll. 26-27.

Appellant respectfully submits that at least the thickness limitations of claims 11-14 clearly and patentably distinguish the claimed invention over Anderié, Dubner, and Kraeuter et

al., that claims 11-14 are nonobvious in view of these references, and that claims 11-14 are separately patentable from the remaining claims.

As discussed above in Section I, Anderié and Kraeuter et al. teach maximum or specific thicknesses for the disclosed structures, while Dubner teaches variable thicknesses for its insole so as to conform with different foot contours. Accordingly, Dubner teaches away from Anderié and Kraeuter et al. with respect to Appellant's thickness preferred limitations in claims 11-13, meaning Appellant's claims 11-13 are nonobvious. *In re Rudko*. Since Dubner teaches away from Anderié and Kraeuter et al. for the specific thickness limitation in each of claims 11-13, these claims are separately patentable as well.

In regard to claim 14, Anderié discloses that the diameter of the plastic wires 91 is greater than the thickness of the anchoring inserts 118, 119. Kraeuter et al. discloses that the thickness of the arch support flange 54 is (i) equal to the thickness of the heel portion 153, and (ii) greater than the thickness of the remainder of the chassis 152. As depicted in their corresponding figures, it is clear that the Anderié plastic wires 91 and the Kraeuter et al. arch support flange 54 are located in a central portion of their respective structures. Assuming, *arguendo*, that these central portions correspond to Appellant's claimed intermediate portion of the torsion system, which they do not, it is clear that these references teach away from Appellant's claimed invention because they disclose intermediate portion thicknesses that are greater than or equal to the thickness of other parts of their respective structures. This is in direct contrast to Appellant's claim 14, where the claimed thickness of the plate is less in the intermediate portion than in the forefoot and rearfoot portions. Further, Dubner neither teaches nor discloses a thickness relationship between an intermediate portion of the Dubner insole and the remainder of the Dubner insole. The combination of Anderié, Dubner, and Kraeuter et al. teaches away from Appellant's claimed invention since a person of ordinary skill, on reading these references, would be led in a direction divergent from the path that Appellant took with respect to claim 14. *In re Gurley*, 31 U.S.P.Q.2d (BNA) at 1131. Accordingly, there is no motivation to combine these references, meaning that claim 14 is nonobvious in light of Anderié, Dubner, and Kraeuter et al. *In re Rudko*.

Further, and as discussed above in connection with independent claim 1, the combination of Anderié, Dubner, and Krauter et al. as set forth in the Office Action fails to render claim 1 obvious. With respect to claims 11-14, which depend directly from claim 9 and indirectly from claim 1, and include all of the limitations of each, Appellant respectfully submits that the additional limitations regarding intermediate portion thickness further distinguishes Appellant's claimed invention over the cited references. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least the limitations of the parent claims and the additional limitations of claims 11-14 in Appellant's claimed invention. Accordingly, a prima facie case of obviousness has not been established with respect to claims 11-14. *See, e.g., In re Wright and In re Nielson.*

Appellant respectfully submits that at least the thickness elements of claims 11-14 clearly and patentably distinguish the claimed invention over Anderié, Dubner, and Krauter et al., that claims 11-14 are nonobvious in view of these references, and that claims 11-14 are separately patentable from the remaining claims.

3. The cited references, alone or in proper combination, do not render claim 18 unpatentable under 35 U.S.C. § 103(a).

Claim 18 is directed to the torsion system of claim 17 wherein the composite material is graphite. P. 7, l. 14. Appellant respectfully submits that at least this aspect of claim 18 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and Krauter et al., that claim 18 is nonobvious in view of these references, and that claim 18 is separately patentable from the remaining claims.

Anderié discloses using carbon fibers in the stiffening element 9, 109. Anderié, col. 4, ll. 55-59; col. 5, ll. 62-66. As its name indicates, the stiffening element 9, 109 resists bending and twisting. Carbon is an allotropic material, meaning several forms of the substance exist, each with very different material properties. Therefore, the form of carbon used in the stiffening element 9, 109 must have properties that allow it to resist the tension that accompanies bending and twisting. Graphite is one form of carbon that does not have the requisite properties. It is well-known that graphite is weak in tension. *See, e.g., Lawrence H. Van Vlack, Elements of*

Materials Science and Engineering p. 489 (4<sup>th</sup> ed., 1980). (Attached hereto as Exhibit A.)

Accordingly, even though Anderié discloses carbon, it teaches away from the use of graphite that Appellant claims, since graphite would not perform as Anderié requires.

Dubner requires a structure that does not allow rotation. Consequently, Dubner teaches away from the use of graphite since the latter would introduce the flexibility that Dubner seeks to eliminate through its use of a synthetic resin that hardens to provide the rigid supportive insole. Kraeuter et al. requires a structure that is resilient to flexing about push-off axes, and discloses vinyl or plastic as the appropriate material for this purpose. Kraeuter et al., col. 6, ll. 13-15. As discussed above, this flexing is not torsional.

Accordingly, Anderié and Dubner teach away from the use of any material with properties like that of graphite, and Kraeuter et al. neither discloses nor suggests a material selection based on desired torsional properties. At the time the invention was made a person of ordinary skill, on reading these references, would not have been motivated to select graphite for use in a torsion system to prescribe desired torsional properties. Further, since Dubner teaches away from torsional rotation of any extent, Dubner teaches away from both Anderié and Kraeuter et al. *In re Rudko* also dictates, therefore, that Appellant's claims 2-4 are nonobvious in view of these references.

As discussed above in connection with independent claim 1, the combination of Anderié, Dubner, and Kraeuter et al. as set forth in the Office Action fails to render claim 1 obvious. With respect to claim 18, which depends directly from claim 17 and indirectly from claim 1 and includes the limitations of both, Appellant respectfully submits that the additional limitation of the graphite composite material further distinguishes Appellant's claimed invention over the cited references. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least the limitations of the parent claims and this additional limitation in Appellant's claimed invention. Accordingly, a prima facie case of obviousness has not been established with respect to claim 18. *See, e.g., In re Wright* and *In re Nielson*.

Appellant respectfully submits that at least the graphite composite material element of claim 18 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, and

Kraeuter et al., that claim 18 is nonobvious in view of these references, and that claim 18 is separately patentable from the remaining claims.

**IV. Claim 7 constitutes nonobvious subject matter and is patentable over Anderié (U.S. Patent No. 4,922,631), in view of Dubner (U.S. Patent No. 3,903,621) and Kraeuter et al. (U.S. Patent No. 5,915,820), in further view of Eisenbach et al. (U.S. Patent No. 4,815,222).**

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**A. The cited references, alone or in proper combination, do not render claim 7 obvious and unpatentable under 35 U.S.C. § 103(a).**

In the Office Action, the Examiner rejected claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Anderié in view of Dubner and Kraeuter et al., in further view of Eisenbach et al. Office Action, p. 4.

1. U.S. Patent No. 4,815,222 to Eisenbach et al. (issued Mar. 28, 1989).

Eisenbach et al. discloses a cycling shoe 10 with a forefoot strap 20 and a midfoot strap 22 having fixed ends on the lateral side of an upper 18. Eisenbach et al., col. 4, ll. 26-28. In use, the forefoot strap 20 and the midfoot strap 22 are drawn across the upper 18 toward the medial side, through loops 14, 16, respectively, and back across the upper 18 to the lateral side and fastened. Col. 4, ll. 28-33. The midfoot strap 22 apparently constrains movement of the foot in the cycling shoe 10 and assists in transmitting forces between the upper 18, a rigid outsole plate 12, and the bicycle pedal 2 during the upstroke phase of pedaling. Col. 4, ll. 47-54. Similarly, the forefoot strap 20 apparently prevents movement of the foot in the upper 18 and transmits forces from the upper 18, to the rigid outsole plate 12, where the forces are transmitted to the bicycle pedal 2. Col. 4, ll. 60-63; col. 5, ll. 9-11. A cleat may be mounted on the rigid outsole plate 12 using a mounting groove 24 or mounting hole 26. Col. 4, ll. 13-18; Eisenbach et al. Figure 5A.

The Office Action states that it would have been obvious, to one of ordinary skill in the art at the time the invention was made, to place an aperture, such as that shown in Eisenbach et al., in the sole of the Anderié, Dubner, and Kraeuter et al. references to allow for a traction cleat to be mounted on the shoe, if desired. Office Action, p. 5.

2. The cited references, alone or in proper combination, do not render claim 7 unpatentable under 35 U.S.C. § 103(a).

Claim 7 is directed to the torsion system of claim 1 wherein the intermediate portion defines at least one circumscribed aperture. Figure 3, RD 21; p. 7, ll. 3-4. Appellant respectfully submits that at least this aspect of claim 7 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, Kraeuter et al., and Eisenbach et al., that claim 7 is nonobvious in view of these references, and that claim 7 is separately patentable from the remaining claims.

The Eisenbach et al. forefoot strap 20 intersects the rigid outsole plate 12 at loop 14 in the forefoot portion of the shoe. Eisenbach et al., Figure 4. Because it is angled rearward, midfoot strap 22 intersects the rigid outsole plate 12 at loop 16 at the rearfoot portion of the shoe. *Id.* In view of these points of intersection, and because both the forefoot strap 20 and the midfoot strap 22 cooperate to constrain the position of the wearer's foot, the forefoot part of the wearer's foot is fixed relative to the rearfoot part. (Although Eisenbach et al. discloses flexion of the wearer's foot, this relates to flexion about the metatarsal heads, not about a longitudinal axis. Eisenbach et al., col. 5, ll. 1-9.) Consequently, the Eisenbach et al. structure does not allow the forefoot part of the wearer's foot to rotate or twist relative to the rearfoot part of the wearer's foot. Eisenbach et al., then, teaches away from any torsional control that Appellant claims. Further, Eisenbach et al. teaches away from the predetermined torsional flexibility that Anderié or Kraeuter et al. disclose. Similar to Dubner, Eisenbach et al. teaches a rigid structure that maintains the position of the wearer's foot. Accordingly, Eisenbach et al. and Dubner teach away from Anderié and Kraeuter et al. and, per *In re Rudko*, Appellant's invention is nonobvious.

Further, and as discussed above in connection with independent claim 1, the combination of Anderié, Dubner, and Kraeuter et al. as set forth in the Office Action fails to render claim 1 obvious. With respect to claim 7, which depends from claim 1 and includes the limitations thereof, Appellant respectfully submits that the additional limitation that the forefoot portion, the rearfoot portion, and the intermediate portion of the torsion system form a single plate further distinguishes Appellant's claimed invention over the cited references. The resulting combination of these references as set forth in the Office Action fails to show or suggest at least the limitations of the parent claim and this additional limitation in Appellant's claimed invention.



Accordingly, a prima facie case of obviousness has not been established with respect to claim 7. See, e.g., *In re Wright* and *In re Nielson*.

Appellant respectfully submits that at least the circumscribed aperture element of claim 7 clearly and patentably distinguishes the claimed invention over Anderié, Dubner, Kraeuter et al., and Eisenbach et al., that claim 7 is nonobvious in view of these references, and that claim 7 is separately patentable from the remaining claims.

**V. The other references cited, but not relied on, by the Examiner neither anticipate nor render obvious Appellant's claims.**

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The Examiner has cited the following references but is not, or is no longer, relying on them to support rejections. Appellant respectfully submits that each of these references, as described below in brief, neither anticipates nor renders obvious Appellant's claimed invention.

1. U.S. Patent No. 3,550,597 to Coplans (issued Dec. 29, 1970).

Coplans discloses a torsion member 15 that purportedly compensates for twisting of a foot during natural walking action. During forward walking motion, torsion member 15 supports the regions under lesser pressure "by yieldably lifting the inner posterior portion of the foot when there is relatively little pressure at that region, as shown in FIG. 9, and by yieldably lifting the outer anterior portion of the foot when there is relatively little pressure at that point." Coplans, col. 4, ll. 13-18. The result is "a noninterrupted torsional and lifting action from the rear to the front of the foot, all three sections 16, 17, and 18 participating in a continuous torsional lifting effort." Col. 4, ll. 35-37. This provides "with each step a comfortable lifting effort in [an] orthopedically correct manner." Col. 4, ll. 43-45. In contrast to Appellant's invention, torsion member 15 does not control the torsional motion between the heel and anterior regions of the foot – such motion is inherent in natural walking action. Rather, torsion member 15 translates this torsional motion into a lifting force that it applies progressively across the extent of the foot during natural walking action to compensate for pressure differences.

2. U.S. Patent No. 5,179,971 to Lain (issued Jan. 19, 1993).

Lain discloses a torsional spring insole 100 that helps correct pronation or supination of the foot. Lain, col. 4, ll. 35-38. The torsional spring insole 100 is embedded between an outer sole 108 and solid filler material 112. When body weight lands inside or outside of the heel (thereby turning the foot inward or outward, respectively), the torsional spring insole 100 forces the shoe, and the foot secured in the shoe, into the correct position. Col. 4, ll. 41-50. Body weight landing inside or outside of the heel causes an inner sole 104 to flex and, as the body weight is transferred to the forward part of the foot (e.g., when walking), the inner sole 104 straightens. This straightening action of the inner sole 104 counteracts the pressure imbalance in the heel region caused by natural walking action. Col. 6, ll. 10-22. Specifically, “[a]s the body weight moves forward and is transferred to the inner sole 104, the potential energy stored in the insole is released providing an energy boost to the heel of the foot.” Col. 5, ll. 48-51. A step-down region 106 of the torsional spring insole 100 stores the potential energy. Col. 6, ll. 15-16. This approach differs significantly from that used in Coplans because, in Lain, there is no contemporaneous, augmentive support mechanism that provides a lifting force to the entire extent of the foot while in motion. Coplans continuously supports each point on the foot where and when the pressure is deficient during motion. In contrast, Lain provides compensatory pressure only to the heel region, and then only after the body weight has transferred to the forward part of the foot. Lain accomplishes this by storing potential energy in the step-down region 106 and releasing it, as a “boost” (i.e., burst-like), when the body weight leaves the heel region.

3. U.S. Patent No. 5,720,117 to Toschi (issued Feb. 24, 1998).

Toschi discloses a shank 10 for stiffening a shoe. The geometry of the shank 10 “provides maximum stability and torsional rigidity to the shank, preventing twisting or bending, and thus making walking more comfortable.” Toschi, col. 2, ll. 19-21. In contrast to Appellant’s claimed invention, the objective in Toschi is “for the shoe to be rigid in the midportion between the heel portion and the toe portion.” Col. 3, ll. 62-63. Consequently, “[t]he shank 10 is affixed to the shoe’s midportion and provides the desired rigidity.” Col. 3, ll. 63-65. This is

distinguishable from both Coplans and Lain, where torsional movement is exploited to provide a lifting force (Coplans) or an energy boost (Lain).

4. U.S. Patent No. 5,924,220 to Ueda et al. (issued Jul. 20, 1999).

Ueda et al. discloses a bicycle shoe that includes a substantially hard and rigid sole portion 18 having a cleat attachment system. Ueda et al., col. 5, ll. 33-38; col. 6, ll. 22-24. The sole portion 18, which may include graphite (*Id.*), defines apertures 40, 42 where the cleat assembly 12 is attached. Col. 6, ll. 45-47. Ueda et al. neither teaches nor suggests that the sole portion 18 exhibits the pre-selected torsional movement that Appellant claims.

5. U.S. Patent No. 6,009,641 to Ryan (issued Jan. 4, 2000).

Ryan discloses a cycling shoe having a bottom plate 28 with a waisted (i.e., narrowed) area between the heel and forefoot areas. Ryan, col. 2, ll. 46-50. This feature allows the rider's heel to axially rotate relative to the forefoot. *Id.* Nevertheless, this configuration does not allow pre-selected rotation, as Appellant claims.

6. U.S. Patent No. 6,038,790 to Pyle et al. (issued Mar. 21, 2000).

Pyle et al. discloses a shoe 12 having an insole 16 that includes a nonwoven polyester insole board 26. Pyle et al., col. 2, ll. 44-47. The insole board 26 defines openings 28B, 28H in the ball and heel regions. *Id.* Unlike Ueda et al., the openings 28B, 28H receive cushioning material to help protect the wearer's foot from loads encountered in walking or running. Col. 2, ll. 52-56. Pyle et al. neither teaches nor suggests that the insole 16 or insole board 26 exhibit the pre-selected torsional movement that Appellant claims.

Appellant respectfully submits that Appellant's claimed invention is clearly and patentably distinguished over these additional references, either alone or in proper combination.

**CONCLUSION**

Appellant respectfully submits that claims 1-4, 7-21, and 23-26 are patentable in view of the cited references. Appellant urges the Board of Patent Appeals and Interferences to reverse the Examiner's rejections of these claims.

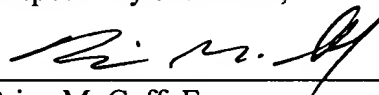
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Respectfully submitted,

  
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## APPENDIX

1. A torsion system for a cycling shoe including a sole with a forefoot area and a rearfoot area, the torsion system including a longitudinal axis and comprising:
  - a forefoot portion of the torsion system spanning substantially the entire forefoot area of the sole from a midtarsal area to a toe area and from a lateral side to a medial side, the forefoot portion having a generally smooth concave contour along the longitudinal axis;
  - a rearfoot portion of the torsion system spanning substantially the entire rearfoot area of the sole from the midtarsal area to a heel area and from the lateral side to the medial side; and
  - an intermediate portion of the torsion system coupling the forefoot portion and the rearfoot portion, and constructed of a material and configured to allow, in a pre-selected manner, rotation of the forefoot portion relative to the rearfoot portion about the longitudinal axis, wherein the intermediate portion includes a rib that projects beyond an adjacent surface of the torsion system.
2. The torsion system of claim 1, wherein the forefoot portion and rearfoot portion rotate between about 5-25 degrees relative to each other about the longitudinal axis at 35 Newtons of torsional load.
3. The torsion system of claim 1, wherein the forefoot portion and rearfoot portion rotate between about 10-20 degrees relative to each other about the longitudinal axis at 35 Newtons of torsional load.
4. The torsion system of claim 1, wherein the forefoot portion and rearfoot portion rotate about 10 degrees relative to each other about the longitudinal axis at 35 Newtons of torsional load.
5. (Canceled)

6. (Not Appealed)

7. The torsion system of claim 1, wherein the intermediate portion defines at least one circumscribed aperture.
8. The torsion system of claim 1, wherein the rearfoot portion defines at least one aperture.
9. The torsion system of claim 1, wherein the forefoot portion, the rearfoot portion, and the intermediate portion form a single plate.
10. The torsion system of claim 9, wherein the plate is substantially rigid in a horizontal plane.
11. The torsion system of claim 9, wherein the plate is between about 1-15 mm thick.
12. The torsion system of claim 9, wherein the plate is between about 3-10 mm thick.
13. The torsion system of claim 9, wherein the plate is between about 5-8 mm thick.
14. The torsion system of claim 9, wherein a thickness of the plate is less in the intermediate portion than in the forefoot and rearfoot portions.
15. The torsion system of claim 9, wherein a width of the intermediate portion of the plate is narrower than the forefoot and rearfoot portions.
16. The torsion system of claim 9, wherein the plate comprises nylon.
17. The torsion system of claim 9, wherein the plate comprises a composite material.
18. The torsion system of claim 17, wherein the composite material is graphite.
19. The torsion system of claim 17, wherein the composite material is fiberglass.
20. The torsion system of claim 9, wherein the forefoot portion and rearfoot portion comprise material properties different than the intermediate portion.

21. A cycling shoe including a sole with a forefoot area and a rearfoot area and a torsion system, the torsion system comprising:
- a sole plate rigid in a horizontal plane and including a longitudinal axis, the sole plate comprising:
  - a forefoot portion of the sole plate spanning substantially the entire forefoot area of the sole from a midtarsal area to a toe area and from a lateral side to a medial side, the forefoot portion having a generally smooth concave contour along the longitudinal axis;
  - a rearfoot portion of the sole plate spanning substantially the entire rearfoot area of the sole from the midtarsal area to a heel area and from the lateral side to the medial side; and
  - an intermediate portion of the sole plate coupling the forefoot portion and the rearfoot portion and constructed of a material and configured to allow, in a pre-selected manner, rotation of the forefoot portion relative to the rearfoot portion about the longitudinal axis, wherein the intermediate portion includes a rib that projects beyond an adjacent surface of the sole plate.
22. (Canceled)
23. The cycling shoe of claim 21, further comprising an upper.
24. The cycling shoe of claim 21, further comprising an outsole.
25. The cycling shoe of claim 21, further comprising a cleat attachment system disposed on the forefoot portion.
26. A torsion system for a cycling shoe including a sole with a forefoot area and a rearfoot area, the torsion system including a longitudinal axis and comprising:

a forefoot portion of the torsion system spanning the forefoot area of the sole, the forefoot portion having a generally smooth concave contour along the longitudinal axis;

a rearfoot portion of the torsion system spanning the rearfoot area of the sole; and

an intermediate portion of the torsion system coupling the forefoot portion and the rearfoot portion, and constructed of a material and configured to allow, in a pre-selected manner, rotation of the forefoot portion relative to the rearfoot portion about the longitudinal axis, wherein the intermediate portion includes a rib that projects beyond an adjacent surface of the torsion system.



**EXHIBIT A**